

Amendment to the claims:

1. (Currently amended) A method of detecting motion in nanoscale structures, comprising:

providing a molecular structure having a rotating arm;
attaching a nanoparticle having first and second ~~surfaces~~
axis to the rotating arm of the molecular structure so that the nanoparticle rotates with the rotating arm of the molecular structure, the first axis of the nanoparticle having a greater length than the second axis;

providing a light from a fixed location;
altering a path of the light from the fixed location to create an oblique angle with respect to the first and second axis of the nanoparticle;

exposing a the light from the altered path onto the nanoparticle, wherein a the first surface axis of the nanoparticle ~~scatters~~ scattering a first wavelength of the light when the nanoparticle is in a first position of rotational motion, and a the second surface axis of the nanoparticle ~~scatters~~ scattering a second wavelength of the light when the nanoparticle is in a second position of rotational motion; and
providing an iris which passes the first and second wavelengths of scattered light and blocks unscattered light;

providing a polarizing filter which is aligned only to the filtering the scattered first and second wavelengths of the light through a polarizing filter to detect rotational motion by observing alternating first and second wavelengths of the light, wherein the polarizing filter blocks light not aligned with the filter;

processing the first and second wavelengths of light from

the polarizing filter through optical processing equipment to separate the first and second wavelengths into first and second channels;

detecting alternating first and second wavelengths by absence of light between each alternating first and second wavelength which indicates motion of the nanoparticle and molecular structure; and

detecting no light which indicates absence of motion of the nanoparticle and molecular structure.

2. (Original) The method of claim 1, wherein the nanoparticle is rod-shaped.
3. (Original) The method of claim 2, wherein the nanoparticle is a gold nanorod.
4. (Cancelled)
5. (Original) The method of claim 4, wherein the first wavelength of the light is longer than the second wavelength of the light.
6. (Original) The method of claim 5, wherein the first wavelength of the light is red light and the second wavelength of the light is green light.
7. (Original) The method of claim 1, wherein the molecular structure is an F1-ATPase enzyme.
8. (Currently amended) The method of claim 1, further

including the step of disposing a detection DNA ~~stand~~ strand between the nanoparticle and the molecular structure, wherein the detection DNA strand hybridizes with a target DNA strand, if the target DNA strand matches the detection DNA strand, to form a structural link between the molecular structure and the nanoparticle.

9. (Currently amended) A method of detecting motion in nanoscale structures, comprising:

attaching a nanoparticle to a rotating portion of a molecular structure, wherein a first axis of the nanoparticle has a greater length than a second axis of the nanoparticle;

exposing a light to ~~a first surface~~ the first axis of the nanoparticle to scatter a first wavelength of the light when the nanoparticle is in a first position of rotational motion;

exposing a light to ~~a second surface~~ the second axis of the nanoparticle to scatter a second wavelength of the light when the nanoparticle is in a second position of rotational motion; and

filtering the scattered light to pass only the first and second wavelengths of the light and block unscattered light ~~to detect the rotational motion by observing the first and second wavelengths of the light;~~

detecting alternating first and second wavelengths by absence of light between each alternating first and second wavelength which indicates motion of the nanoparticle and molecular structure; and

detecting no light which indicates absence of motion of the nanoparticle and molecular structure.

10. (Original) The method of claim 9, wherein the nanoparticle is rod-shaped.

11. (Original) The method of claim 10, wherein the nanoparticle is a gold nanorod.

12. (Cancelled)

13. (Original) The method of claim 12, wherein the first wavelength of the light is longer than the second wavelength of the light.

14. (Original) The method of claim 13, wherein the first wavelength of the light is red light and the second wavelength of the light is green light.

15. (Original) The method of claim 9, wherein the molecular structure is an F1-ATPase enzyme.

16. (Original) The method of claim 9, wherein the step of filtering the first and second wavelengths of the light uses a polarizing filter.

17. (Currently amended) The method of claim 9, wherein the step of further including the step of disposing a detection DNA ~~stand~~ strand between the nanoparticle and the molecular structure, wherein the detection DNA strand hybridizes with a target DNA strand, if the target DNA strand matches the detection DNA strand, to form a structural link between the molecular structure and the nanoparticle.

18-25. (Cancelled)

26. (Currently amended) A method of detecting motion, comprising:

attaching an anisotropic particle to a rotating portion of a molecular base structure, wherein a first axis of the anisotropic particle has a greater length than a second axis of the anisotropic particle;

exposing a light to the first and second axis of the anisotropic particle to scatter first and second wavelengths of the light, respectively; and

filtering the scattered light to pass the first and second wavelengths of the light and block unscattered light to detect the rotation motion by observing the first and second wavelengths of the light;

detecting alternating first and second wavelengths by absence of light between each alternating first and second wavelength which indicates motion of the anisotropic particle and molecular base structure; and

detecting no light which indicates absence of motion of the anisotropic particle and molecular base structure.

27. (Original) The method of claim 26, wherein the anisotropic particle is rod-shaped.

28. (Original) The method of claim 27, wherein the anisotropic particle is a gold nanorod.

29. (Cancelled)

30. (Original) The method of claim 29, wherein the first wavelength of the light is longer than the second wavelength of the light.

31. (Original) The method of claim 30, wherein the first wavelength of the light is red light and the second wavelength of the light is green light.

32. (Original) The method of claim 26, wherein the base structure is an F1-ATPase enzyme.

33-37. (Cancelled)

38. (New) The method of claim 26, wherein the speed of rotation of the rotating arm is observable by the rate of alternating first and second wavelengths of light.

39. (New) The method of claim 1, wherein the speed of rotation of the rotating arm is observable by the rate of alternating first and second wavelengths of light.